Chapter 1

Getting Acquainted
— Read This First!

The symbols in this manual indicate the following messages.

: Important notes

: Notes

: Reference pages

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1. Using the Main Menu

The main menu appears on the display whenever you turn on the calculator. It contains a number of icons that let you select the mode (work area) for the type of operation you want to perform. You can also make the Main Menu appear at any time by pressing MENU.

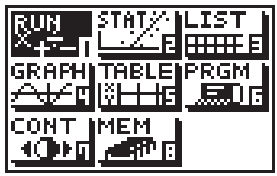
The following explains the meaning of each icon.

Icon	Meaning
	Use this mode for arithmetic calculations and function calculations.
	Use this mode to perform single-variable (standard deviation) and paired-variable (regression) statistical calculations, and to draw statistical graphs.
	Use this mode for storing and editing numeric data.
	Use this mode to store graph functions and to draw graphs using the functions.
	Use this mode to store functions, to generate a numeric table of different solutions as the values assigned to variables in a function change, and to draw graphs.
	Use this mode to store programs in the program area and to run programs.
	Use this mode to adjust the contrast of the display.
	Use this mode to check how much memory is used and remaining, to delete data from memory, and to initialize (reset) the calculator.

●To enter a mode

Example **To enter the RUN Mode from the Main Menu**

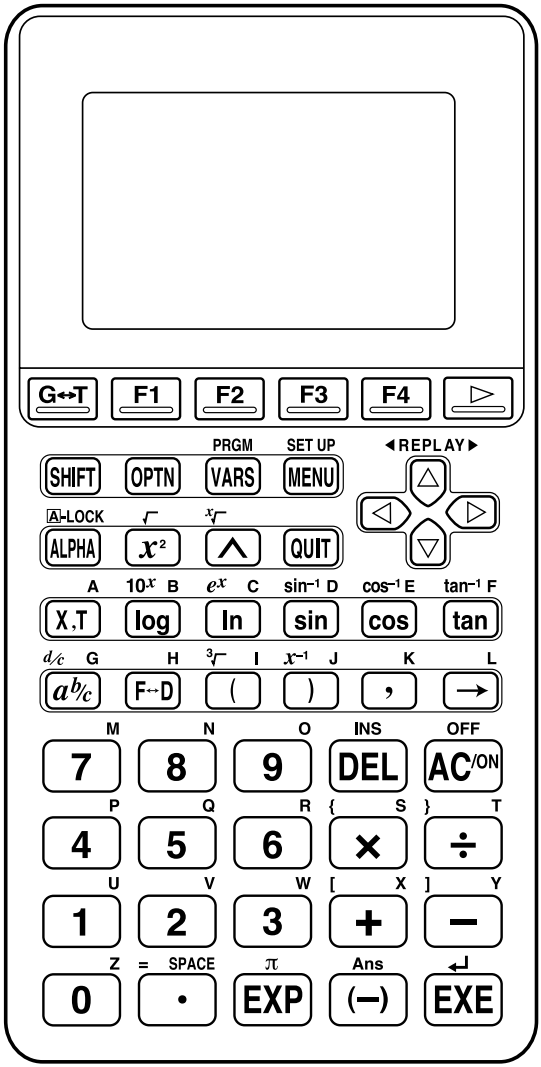
1. Press [MENU] to display the Main Menu.
2. Use ◀, ▶, ▲, and ▼ to move the highlighting to the **RUN** icon.
3. Press [EXE] to enter the RUN Mode.



- You can also enter a mode without highlighting an icon in the Main Menu by inputting the number marked in the lower right corner of the icon.
- When you enter a mode, up to four function key menu items appear at the bottom of the display. Each menu item corresponds to the function key ([F1], [F2], [F3], [F4]) that is below the item. Some function menus have multiple pages. When this happens, you should press [▷] to advance to the next menu page.

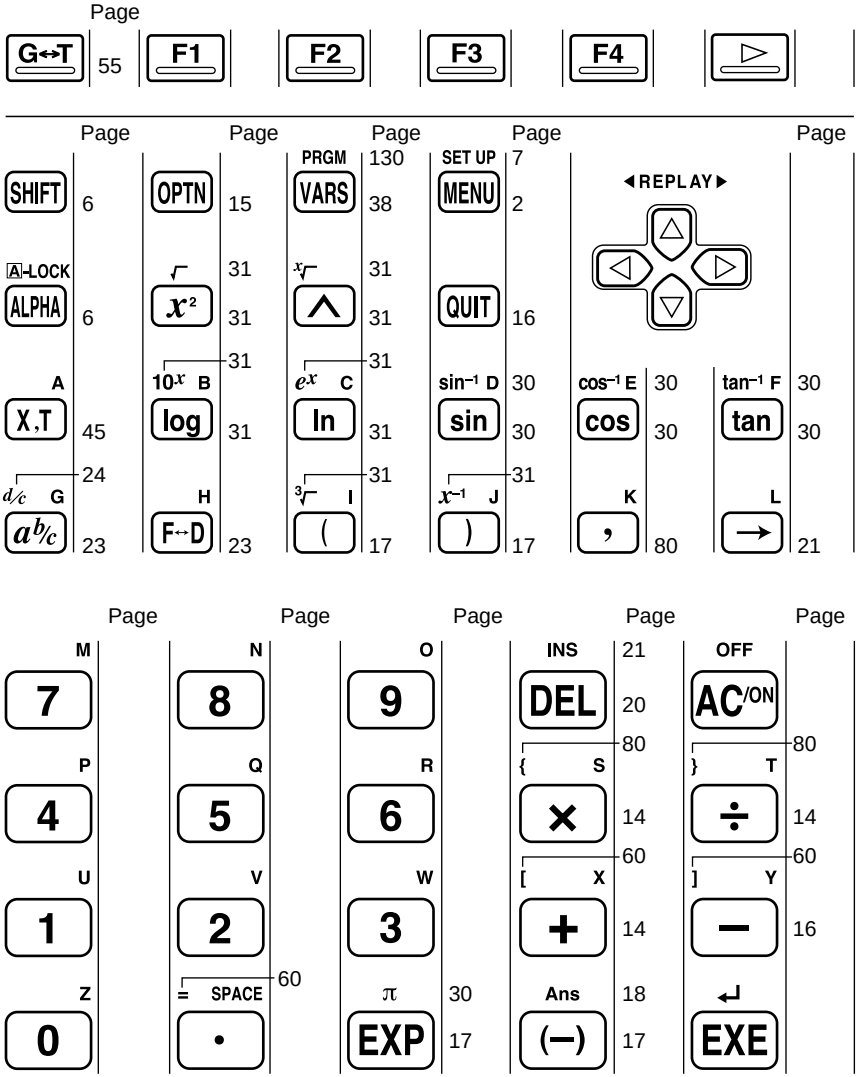
Example Menus

2. Key Table



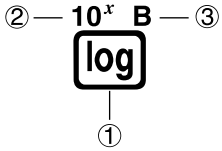
Alpha Lock

Normally, once you press [ALPHA] and then a key to input an alphabetic character, the keyboard reverts to its primary functions immediately. If you press [SHIFT] and then [ALPHA], the keyboard locks in alpha input until you press [ALPHA] again.


Page
G↔T 55
F1
F2
F3
F4
Page Page Page Page Page
SHIFT 6
OPTN 15
PRGM VARS 130 38
SET UP MENU 7 2
◀REPLAY▶
A-LOCK ALPHA 6
31 x² 31
31 ^ 31
QUIT 16
A X,T 45
10^x B 31 log 31
e^x C 31 ln 31
sin⁻¹ D 30 sin 30
cos⁻¹ E 30 cos 30
tan⁻¹ F 30 tan 30
d/c G 24 a b/c 23
H F↔D 23
3√ I 31 (17
x⁻¹ J 31) 17
K , 80
L → 21
Page Page Page Page Page
M 7
N 8
O 9
INS DEL 21 20
OFF AC/ON
P 4
Q 5
R 6
{ S 80 × 14
} T 80 ÷ 14
U 1
V 2
W 3
[X 60 + 14
] Y 60 − 16
Z 0
= SPACE 60 •
π 30 EXP 17
Ans 18 (−) 17
↵ EXE

3. Key Markings

Many of the calculator's keys are used to perform more than one function. The functions marked on the keyboard are color coded to help you find the one you need quickly and easily.



	Function	Key Operation
①	log	[log]
②	10^x	[SHIFT] [log]
③	B	[ALPHA] [log]

The following describes the color coding used for key markings.

Color	Key Operation
Orange	Press [SHIFT] and then the key to perform the marked function.
Red	Press [ALPHA] and then the key to perform the marked function.

4. Selecting Modes

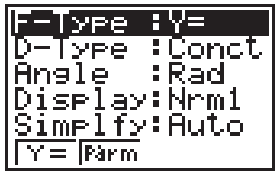
■ Using the Set Up Screen

The first thing that appears when you enter a mode is the mode's set up screen, which shows the current status of settings for the mode. The following procedure shows how to change a set up.

●To change a mode set up

1. Select the icon you want and press [EXE] enter a mode and display its initial screen. Here we will enter the RUN Mode.

2. Press [SHIFT] [SET UP] to display the mode's set up screen.
   - This set up screen is just one possible example. Actual set up screen contents will differ according to the mode you are in and that mode's current settings.



3. Use the ▲ and ▼ cursor keys to move the highlighting to the item whose setting you want to change.
4. Press the function key ([F1] to [F4]) that is marked with the setting you want to make.
5. After you are finished making any changes you want, press [QUIT] to return to the initial screen of the mode.

■ Set Up Screen Function Key Menus

This section details the settings you can make using the function keys in the set up display.

●Graph Function Type (F-Type)

[F1] (Y=) ..... Rectangular coordinate graphs

[F2] (Parm) ..... Parametric coordinate graphs

[▷]

[F1] (Y>) ..... $y > f(x)$ inequality graph

[F2] (Y<) ..... $y < f(x)$ inequality graph

[F3] (Y≥) ..... $y \geqq f(x)$ inequality graph

[F4] (Y≤) ..... $y \leqq f(x)$ inequality graph

Press [▷] to return to the previous menu.

- The setting you make for F-Type determines the variable name that is input when you press [X,T].

●Graph Draw Type (D-Type)

[F1] (Con) ..... Connection of points plotted on graph.

[F2] (Plot) ..... Plotting of points on graph without connection.

●Angle unit (Angle)

F1 (Deg) ..... Specifies degrees as default.

F2 (Rad) ..... Specifies radians as default.

F3 (Gra) ..... Specifies grads as default.

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●Statistical Graph View Window Setting (S-Wind)

F1 (Auto) ..... Automatic setting of view window values for statistical graph drawing.

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F2 (Man) ..... Manual setting of view window values for statistical graph drawing.

●Graph Function Display (G-Func)

F1 (On) ..... Turns on display of function during graph drawing and trace.

F2 (Off) ..... Turns off display of function during graph drawing and trace.

●Simultaneous Graph Mode (Simul-G)

F1 (On) ..... Turns on simultaneous graphing of all functions in memory.

F2 (Off) ..... Simultaneous graphing off (graphs drawn one-by-one).

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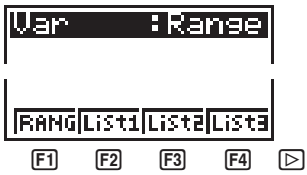
●Table & Graph Generation Settings (Var)

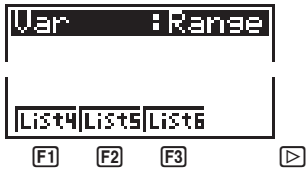
F1 (RANG) .... Table generation and graph drawing using numeric table range.

F2 (List1)
F3 (List2) .... Table generation and graph drawing using list data.
F4 (List3)



▷

F1 (List4)
F2 (List5) .... Table generation and graph drawing using list data.
F3 (List6)



Press ▷ to return to the previous menu.

Other menus for set up (Display, Simply, Frac) are described in each applicable section of this manual as they come up.

Abbreviations

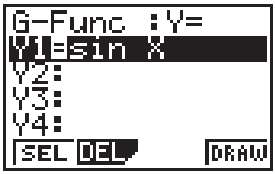
STAT ..... Statistics
PRGM ..... Program
CONT ..... Contrast
MEM ..... Memory

5. Display

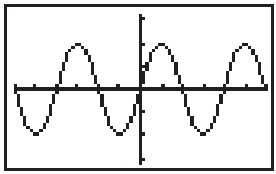
■ About the Display Screen

This calculator uses two types of display: a text display and a graphic display. The text display can show 13 columns and six lines of characters, with the bottom line used for the function key menu, while the graph display uses an area that measures 79 (W) × 47 (H) dots.

Text Display



Graph Display



■ About Menu Item Types

This calculator uses certain conventions to indicate the type of result you can expect when you press a function key.

• Next Menu

Example: LIST

Selecting LIST displays a menu of list functions.

• Command Input

Example: List

Selecting List inputs the “List” command.

• Direct Command Execution

Example: DRAW

Selecting DRAW executes the DRAW command.

■ Exponential Display

The calculator normally displays values up to 10 digits long. Values that exceed this limit are automatically converted to and displayed in exponential format. You can specify one of two different ranges for automatic changeover to exponential display.

Norm 1 ..... 10^{-2} (0.01) > $|x|$, $|x| \geqq 10^{10}$

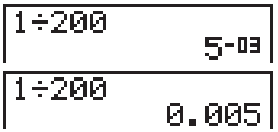
Norm 2 ..... 10^{-9} (0.000000001) > $|x|$, $|x| \geqq 10^{10}$

●To change the exponential display range

1. Press SHIFT SETUP to display the Set Up Screen.
2. Use ▲ and ▼ to move the highlighting to “Display”.
3. Press F3 (Norm).

The exponential display range switches between Norm 1 and Norm 2 each time you perform the above operation. There is no display indicator to show you which exponential display range is currently in effect, but you can always check it by seeing what results the following calculation produces.

AC 1 ÷ 2 0 0 EXE



(Norm 1)

(Norm 2)

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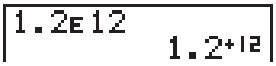
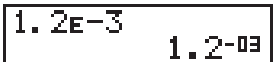
All of the examples in this manual show calculation results using Norm 1.

For full details about the “Display”, see “Selecting Value Display Modes”.

●How to interpret exponential format



$1.2_{E^{+12}}$ indicates that the result is equivalent to 1.2×10^{12}. This means that you should move the decimal point in 1.2 twelve places to the right, because the exponent is positive. This results in the value 1,200,000,000,000.



$1.2_{E^{-03}}$ indicates that the result is equivalent to 1.2×10^{-3}. This means that you should move the decimal point in 1.2 three places to the left, because the exponent is negative. This results in the value 0.0012.

■ Special Display Formats

This calculator uses special display formats to indicate fractions, and sexagesimal values.

●Fractions

456⌟12⌟23
456⌟12⌟23 ..... Indicates: $456\frac{12}{23}$

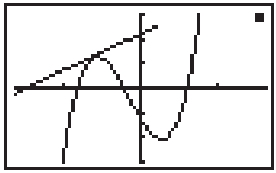
●Sexagesimal Values

12.58244
12°34'56.78" ..... Indicates: 12° 34' 56.78"

- In addition to the above, this calculator also uses other indicators or symbols, which are described in each applicable section of this manual as they come up.

■ Calculation Execution Screen

Whenever the calculator is busy drawing a graph or executing a long, complex calculation or program, a black box (■) flashes in the upper right corner of the display. This black box tells you that the calculator is performing an internal operation.

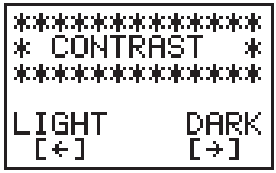


6. Contrast Adjustment

Adjust the contrast whenever objects on the display appear dim or difficult to see.

●To display the contrast adjustment screen

Highlight the **CONT** icon in the Main Menu and then press [EXE].



Press ◀ to make the figures on the screen lighter or ▶ to make them darker.

After getting the contrast the way you want it, press [MENU] to return to the main menu.

7. When you keep having problems…

If you keep having problems when you are trying to perform operations, try the following before assuming that there is something wrong with the calculator.

■ Get the Calculator Back to its Original Mode Settings

1. In the Main Menu, select the **RUN** icon and press [EXE].
2. Press [SHIFT] [SETUP] to display the Set Up Screen.
3. Highlight “Angle” and press [F2] (Rad).
4. Highlight “Display” and press [F3] (Norm) to select the exponential display range (Norm 1 or Norm 2) that you want to use.

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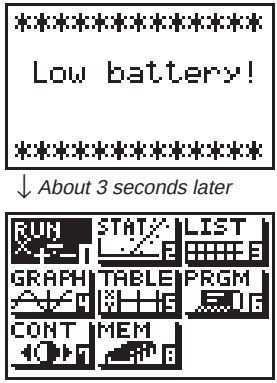
5. Now enter the correct mode and perform your calculation again, monitoring the results on the display.

■ Low Battery Message

The low battery message appears while the main battery power is below a certain level whenever you press [AC/ON] to turn power on or [MENU] to display the Main Menu.

[AC/ON] or [MENU]



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If you continue using the calculator without replacing batteries, power will automatically turn off to protect memory contents. Once this happens, you will not be able to turn power back on, and there is the danger that memory contents will be corrupted or lost entirely.